



**Prepare the
Scientists and Engineers
of Tomorrow**

Get students ready for their next step—in school, at work, or in life—with the use of Vernier technology. Our extensive resources make it easy to incorporate technology into your lab to educate, inspire, and prepare your students for the future.

Why Vernier?

Our durable hardware and quality software are designed and priced for hands-on student use. Give your students the opportunity to gain practical, relevant data-collection and analysis experience that they can use wherever they go next.



Endless Possibilities

We have ready-to-go experiments and resources in a wide variety of subjects, including

BIOLOGY • CHEMISTRY • PHYSICS • ENGINEERING
AGRICULTURAL SCIENCE • ENVIRONMENTAL SCIENCE • PHYSIOLOGY

Our sensors and data-collection technology are so versatile that you can use them in nearly any science or engineering course.

Join these institutions, and hundreds of others, already using Vernier technology

Arizona State University	Stanford University
Baltimore City Community College	Stephen F. Austin State University
Benedictine University	TEC Monterrey
California State University—Fullerton	Texas A&M
Cameron University	The Ohio State University
Canisius College	University of Arizona
Colorado School of Mines	University of California—Berkeley
Cornell University	University of Cambridge
Cuyahoga Community College	University of Chicago
Dickinson College	University of Hong Kong
Georgia Tech	University of Kansas
Harvard University	University of Minnesota—Minneapolis
Haskell Indian Nations University	University of Nebraska—Lincoln
Immaculata University	University of Pennsylvania
Lehigh University	University of Sydney
Massachusetts Institute of Technology	University of Tennessee—Chattanooga
Miami University	University of Washington
Michigan Technological University	University of Wisconsin—Madison
Mississippi State University	Vincennes University
Oregon State University	Virginia Commonwealth University
Princeton University	Wake Technical Community College
Queensborough Community College	West Virginia Wesleyan College
Quinnipiac University	Wright State University
Saint Mary's University	Yale University



**I really appreciated that Vernier is very supportive of schools.
Your customer service is excellent, and we are very happy
to use Vernier products in our labs.**

Joy Nguyen
California State University—Monterey Bay

QUALITY

*Durable hardware for lab
and field use*

AFFORDABLE

*Designed for education and
educational budgets*

VERSATILE

*Supports a variety of devices
and experiments*

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Biology

[vernier.com/biology](https://www.vernier.com/biology)

Why Vernier?

Vernier biology solutions help students form a deep understanding of key scientific concepts. Whether you are introducing your students to enzymes or exploring primary productivity, our probeware and ready-to-go experiments are the right fit for your laboratory.

Quality

Durable hardware for lab and field use

Affordable

Designed for education and educational budgets

Versatile

Supports a variety of devices and experiments



Your great products and superb support of them have been a major part of my labs and are very much appreciated.

David Willey
University of Pittsburgh, Pittsburgh, Pennsylvania

We're here to support you as an educator as you incorporate data-collection technology into your instruction. See how our products provide you with affordable laboratory solutions designed for student success.

Our Guarantee: Most of our products are protected by a 5-year limited warranty. And after five years? We'll make every attempt to repair your equipment.

A Guide to Vernier Data Collection

What You Need to Get Started with Go Direct Sensors

A Go Direct Sensor

These versatile sensors connect to your device via Bluetooth® wireless technology or USB.

B Device

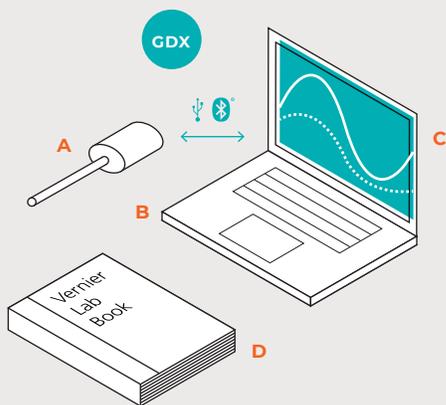
Go Direct® sensors connect to a wide variety of commonly used devices, including Chromebooks, computers, tablets, smartphones, and LabQuest 2.

C Software

Graphical Analysis™ 4
Vernier Spectral Analysis®

D Lab Book

Our popular, award-winning lab books provide hundreds of well-tested, customizable experiments. Our lab books come with a generous site license. Purchase once and share files across your department.



What You Need to Get Started with LabQuest 2 as a Standalone Device

A Sensor

1 GO DIRECT SENSOR

These versatile sensors connect to LabQuest 2® 2 via Bluetooth wireless technology or USB.

2 LABQUEST SENSOR

LabQuest sensors connect directly to LabQuest 2 sensor ports (BTA/BTD).

C Software

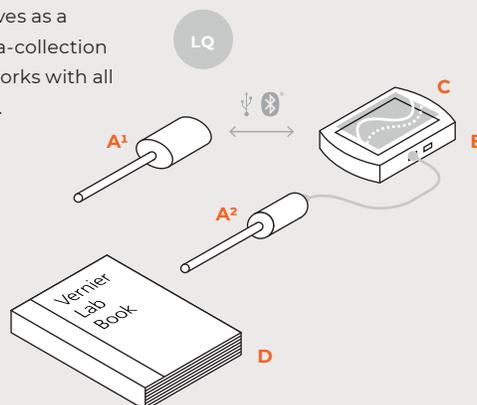
LabQuest App

D Lab Book

Our popular, award-winning lab books provide hundreds of well-tested, customizable experiments. Our lab books come with a generous site license. Purchase once and share files across your department.

B LabQuest 2

LabQuest 2 serves as a standalone data-collection platform that works with all Vernier sensors.



Software

Graphical Analysis 4

Using our Graphical Analysis 4 app, students can collect and analyze data on computers, Chromebooks, and compatible mobile devices using a wide variety of Vernier sensors.

Vernier Spectral Analysis

Spectral Analysis supports our family of spectrometers on computers, Chromebooks, and compatible mobile devices. Use it to generate full spectra, create standard curves, and conduct kinetics experiments.

LabQuest App

LabQuest 2 has built-in software that gives your students real-time graphing capabilities in a handheld device. It's powerful, yet beautifully simple.

Partnerships

LabArchives

Vernier Software & Technology has partnered with LabArchives to bring high-quality biology content to instructors through the Lab Builder library. Because all content is structured and standardized, instructors can arrange, customize, and add content to their courses with ease.

vernier.com/lab-archives

ADInstruments

Vernier Software & Technology has partnered with ADInstruments to provide state-of-the-art, customizable biology content using ADInstruments' platform, Lt. This platform supports real-time data collection and analysis with Vernier sensors and includes instructional videos, quizzes, and classroom management tools.

vernier.com/adinstruments

Free 30-Day
Preview

Not sure if our technology is right for your laboratory? Our risk-free preview program makes it easier to decide. Most Vernier products are available for a 30-day preview (or longer, if requested) to educational institutions.

General Biology

Go Direct CO₂ Gas

This sensor measures gaseous carbon dioxide concentration levels, air temperature, and relative humidity. With built-in temperature compensation and humidity protection, this sensor is ideal for measuring fermentation, respiration, and photosynthesis.

GDX-CO2 \$199

vernier.com/gdx-co2

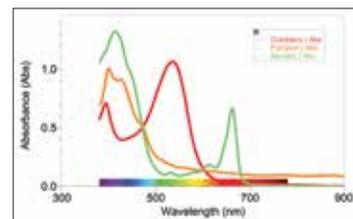


Go Direct SpectroVis[®] Plus

Use this spectrophotometer to collect a full-wavelength spectrum (absorbance, percent transmission, fluorescence, or intensity), study absorbance vs. concentration (create standard curves), or monitor enzyme activity (enzyme kinetics).

GDX-SVISPL \$399

vernier.com/gdx-svispl



Vernier Spectral Analysis
FREE DOWNLOAD

Go Direct Tris-Compatible Flat pH

Use this sensor to measure the pH of solutions. It features a sealed, gel-filled, double-junction electrode, making it compatible with Tris buffers and solutions containing proteins or sulfides.

GDX-FPH \$115

vernier.com/gdx-fph



Go Direct Optical Dissolved Oxygen

Use this sensor to measure dissolved oxygen, water temperature, and atmospheric pressure. It's ideal for experiments in biology, ecology, and environmental science.

GDX-ODO \$298

vernier.com/gdx-odo



Celestron Digital Microscope Imagers

Celestron[®] Digital Microscope Imagers turn your traditional compound or stereo microscope into a high-resolution digital imager using a personal computer or Chromebook.[™]

CS-5MP ⬆️ \$109

CS-DMI ⬆️ \$79

vernier.com/cs-dmi



Microscope not included

Investigating Biology through Inquiry

This book includes 22 investigations for many fundamental concepts in biology. Each investigation includes a preliminary activity, instructor information, sample researchable questions, and sample data.

Topics

- Cell and molecular biology
- Organismal biology
- Ecology
- Evolution

vernier.com/bio-i



Download only
BIO-I-E \$40
Printed book + download
BIO-I \$48

Biology Go Direct Starter Package

Learn more at
vernier.com/gdp-bio-st

This package includes 4 sensors, which all work with our free Graphical Analysis 4 app or LabQuest 2.

- Go Direct Temperature
- Go Wireless Heart Rate
- Go Direct Gas Pressure
- Go Direct CO₂ Gas

GDP-BIO-ST \$446



Human Physiology

Go Direct EKG

Use Go Direct® EKG to record electrical activity of the heart or skeletal muscles.

GDX-EKG \$159 vernier.com/gdx-ekg



Go Direct Hand Dynamometer

Measure grip and pinch strength and perform muscle fatigue studies.

GDX-HD \$109 vernier.com/gdx-hd



Go Direct Respiration Belt

Use this sensor to measure human respiration rate and study breathing patterns.

GDX-RB \$99

vernier.com/gdx-rb



Go Direct Surface Temperature

This sensor has an exposed thermistor that results in an extremely rapid response time. This design allows it to be used on the skin or in air or water.

GDX-ST \$79

vernier.com/gdx-st



Go Direct O₂ Gas

Use this sensor to measure gaseous oxygen concentration levels and air temperature.

GDX-O2 \$189

vernier.com/gdx-o2



NEW Go Direct Blood Pressure

This affordable, non-invasive sensor is designed to easily measure human blood pressure.

GDX-BP \$105 vernier.com/gdx-bp



NEW Go Direct Spirometer

This multi-channel sensor can be used to measure tidal volume, vital capacity, flow rate, air pressure, and respiration rate.

Included accessories & parts

- Go Direct Spirometer
- Disposable mouthpieces (3)
- Disposable bacterial filter (3)
- Nose clips (3)

GDX-SPR \$199

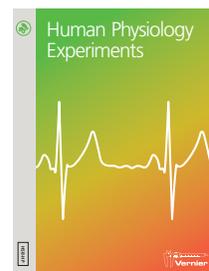
vernier.com/gdx-spr



Human Physiology Experiments

This book contains 14 experiments that encourage students to investigate the physiology of the cardiac, muscular, respiratory, vascular, and nervous systems using Go Direct sensors.

vernier.com/hsb-hp



Download only

HSB-HP-E \$30

Printed book + download

HSB-HP \$38

Human Physiology Go Direct Standard Package

This package includes 11 products, which all work with our free Graphical Analysis™ 4 app or LabQuest® 2.

- Go Direct EKG
- Go Direct Force and Acceleration
- Go Direct Surface Temperature
- Go Direct Hand Dynamometer
- Go Direct Respiration Belt
- Go Direct O₂ Gas
- Go Direct Blood Pressure
- Go Direct Spirometer
- Go Wireless Heart Rate
- Reflex Hammer Accessory Kit
- BioChamber 250

GDP-HP-DX ⚡ \$1,164

Buy 8 or more packages at \$1,129 and save \$280.

Learn more at vernier.com/gdp-hp-dx

Starter package also available



Biotechnology

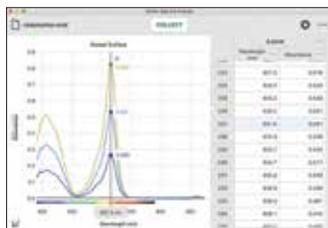
Spectrometers

Go Direct SpectroVis® Plus

Use this spectrophotometer to collect a full-wavelength spectrum (absorbance, percent transmission, fluorescence, or intensity), study absorbance vs. concentration (create standard curves), or monitor enzymatic activity (enzyme kinetics).

GDX-SVISPL \$399

vernier.com/gdx-svispl



Vernier UV-VIS Spectrophotometer

This ultraviolet and visible light spectrophotometer is used to measure the absorbance spectra of various chemical and biochemical compounds such as DNA, proteins, and NADH.

VSP-UV \$2,100

vernier.com/vsp-uv



Vernier Fluorescence/UV-VIS Spectrophotometer

This spectrophotometer measures the fluorescence and absorbance spectra of ultraviolet and visible samples such as quinine sulfate, fluorescein, rhodamine, and DAPI.

VSP-FUV \$2,899

vernier.com/vsp-fuv



Vernier Spectral Analysis®

Our free Spectral Analysis app makes it easy to incorporate spectroscopy into your general biology and biotechnology experiments. Using the app, students can collect a full spectrum and explore topics such as plant pigments, enzyme kinetics, and Beer's law (standard curves).

FREE DOWNLOAD vernier.com/spectral-analysis

Go Direct Tris-Compatible Flat pH

This pH sensor features a sealed, gel-filled, double-junction electrode, making it compatible with Tris buffers and solutions containing proteins or sulfides.

GDX-FPH \$115

vernier.com/gdx-fph



BlueView Transilluminator

This transilluminator uses super bright blue LEDs to illuminate electrophoresis gels stained with fluorescent dyes (e.g., SYBR® Safe). This combination is a safer alternative to ethidium bromide and a UV transilluminator.

BLUE-VIEW \$419 vernier.com/blue-view



Stir Station

This combination stir plate/ring stand can be used with AC power (included) or four C batteries (not included).

STIR \$129 vernier.com/stir



OHAUS Balances

Collect mass data from OHAUS Scout® balances using Logger Pro® 3 software or a LabQuest 2.

vernier.com/ohaus



Vernier and Bio-Rad®

Bio-Rad combines high-quality supplies, equipment, and curricula with outstanding customer service and technical support—things we believe are important to teachers. Vernier and Bio-Rad enhance classroom experiences with joint experiments and curricula for biotechnology.

Download free sample experiments at vernier.com/bio-rad-kits

Environmental Science

Go Direct Optical Dissolved Oxygen

Use this sensor to measure dissolved oxygen, water temperature, and atmospheric pressure. It is ideal for experiments in environmental science.

GDX-ODO \$298

vernier.com/gdx-odo



Go Direct Conductivity

Use this sensor to measure total dissolved solids (TDS) in aquatic samples or the salinity of soil samples.

GDX-CON \$99

vernier.com/gdx-con



Go Direct Temperature

This rugged probe measures the temperature of a variety of substances including air, soil, and water.

Range: -40 to 125°C

GDX-TMP \$69

vernier.com/gdx-tmp



Go Direct Tris-Compatible Flat pH

The flat glass shape of this pH sensor is more durable and easier to clean than the traditional pH bulb shape, making it the best choice for environmental science.

GDX-FPH \$115

vernier.com/gdx-fph



Go Direct Nitrate Ion-Selective Electrode

Use this sensor to measure nitrate concentration in water samples from water sources throughout your watershed.

GDX-NO3 \$249

vernier.com/gdx-no3



NEW Go Direct Weather

Easily monitor a wide variety of environmental factors with just one sensor. Go Direct® Weather is an affordable, wireless, handheld sensor used to measure ambient temperature, humidity, wind speed, wind chill, dew point, barometric pressure, and more.

Available Spring 2020

vernier.com/gdx-wthr



LabQuest 2

LabQuest 2 is a powerful, connected, and remarkably versatile data-collection solution.

Why? LabQuest® 2 can serve as a standalone data-collection platform, and it works with all of our sensors. This plus the built-in GPS makes it the preferred choice for instructors and students in the field.

LABQ2 \$339

vernier.com/labq2

LabQuest App

LabQuest 2 has built-in software that gives your students real-time graphing capabilities in a handheld device. It's powerful, yet beautifully simple.



Environmental Science

Davis Vantage Vue Weather Station

The wireless Vantage Vue weather station provides accurate, reliable weather monitoring in a self-contained, easy-to-install system. The sensor suite measures

- Temperature
- Humidity
- Barometric pressure
- Wind speed and direction
- Dew point
- Rainfall

Choose to view weather data streamed live on the internet via Wi-Fi, on a dedicated console in your classroom, or both!



Three bundles are available	Stream Live Data on the Internet via Wi-Fi	View Data on Console	Order Code	Price
Davis® Vantage Vue Wireless Weather Station (with console)		●	DWVUE	\$395
Davis Vantage Vue + WeatherLink™ (without console)	●		DWVUE-LWOC	\$465
Davis Vantage Vue + WeatherLink (with console)	●	●	DWVUE-LWC	\$595

vernier.com/weather-stations



NEW Go Direct Sensor Clamp

Prevent accidental drops during field investigations with the Go Direct Sensor Clamp.

GDX-CLAMP \$12

vernier.com/gdx-clamp



Renewable Energy with Vernier

The *Renewable Energy with Vernier* lab book features 26 experiments in wind and solar energy. The book contains a combination of explorations, classic experiments, inquiry investigations, engineering projects, and more.



Download only
REV-E \$40

Printed book + download
REV \$48

vernier.com/rev

Investigating Environmental Science through Inquiry*

This book contains 34 inquiry-based environmental science investigations. Topics include Earth systems and resources, the living world, global change and population, energy resources and consumption, and pollution.



Download only
ESI-E \$40

Printed book + download
ESI \$48

vernier.com/esi

Water Quality with Vernier*

With the 18 tests in *Water Quality with Vernier*, students investigate the water quality of a body of water by testing pH, total dissolved solids, dissolved oxygen, BOD, and more.



Download only
WQV-E \$40

Printed book + download
WQV \$48

vernier.com/wqv

* Instructions for Graphical Analysis 4 app are not yet available.

Biology Products

Go Direct Sensors

Product	Order Code	Price
Go Direct® Blood Pressure	GDX-BP	\$105
Go Direct CO ₂ Gas	GDX-CO2	\$199
Go Direct Colorimeter	GDX-COL	\$119
Go Direct Conductivity	GDX-CON	\$99
Go Direct EKG	GDX-EKG	\$159
Go Direct Ethanol Vapor	GDX-ETOH	\$149
Go Direct Energy	GDX-NRG	\$89
Go Direct Force and Acceleration	GDX-FOR	\$99
Go Direct Gas Pressure	GDX-GP	\$89
Go Direct Hand Dynamometer	GDX-HD	\$109
Heart Rate Monitors		
Go Wireless Exercise Heart Rate	GW-EHR	\$79
Go Wireless Heart Rate	GW-HR	\$89
Ion-Selective Electrodes		
Go Direct Ammonium Ion-Selective Electrode	GDX-NH4	\$249
Go Direct Nitrate Ion-Selective Electrode	GDX-NO3	\$249
Go Direct Light and Color	GDX-LC	\$79
Go Direct O ₂ Gas	GDX-O2	\$189
Go Direct Optical Dissolved Oxygen	GDX-ODO	\$298
pH Sensors		
Go Direct pH	GDX-PH	\$89
Go Direct Tris-Compatible Flat pH	GDX-FPH	\$115
Go Direct Respiration Belt	GDX-RB	\$99
Spectrophotometers		
Go Direct SpectroVis® Plus	GDX-SVISPL	\$399
Vernier Fluorescence/UV-VIS Spectrophotometer	VSP-FUV	\$2,899
Vernier UV-VIS Spectrophotometer	VSP-UV	\$2,100
Go Direct Spirometer	GDX-SPR	\$199
Temperature Probes		
Go Direct Surface Temperature	GDX-ST	\$79
Go Direct Temperature	GDX-TMP	\$69
Go Direct Wide-Range Temperature	GDX-WRT	\$114

LabQuest Sensors

Product	Order Code	Price
PAR Sensor	PAR-BTA	\$229
Relative Humidity Sensor	RH-BTA	\$69
Salinity Sensor	SAL-BTA	\$119
Soil Moisture Sensor	SMS-BTA	\$109
Turbidity Sensor	TRB-BTA	\$112

Accessories and Lab Equipment

Product	Order Code	Price
BioChamber 250	vernier.com/bc-250	
BioChamber 2000	vernier.com/bc-2000	
BlueView Transilluminator	vernier.com/blue-view	
Disposable Bacteria Filters (pkg. of 10)	SPR-FIL10	\$45
Disposable Mouth Pieces (pkg. of 30)	SPR-MP30	\$15
EKG Electrodes (pkg. of 100)	ELEC	\$15
Go Direct Charge Station	GDX-CRG	\$69
Go Direct Sensor Clamp	GDX-CLAMP	\$12
Nose Clip (pkg. of 10)	SPR-NOSE10	\$10
OHAUS® Balances	vernier.com/ohaus	
Primary Productivity Kit	PPK	\$44
Reflex Hammer Accessory Kit	RFX-ACC	\$29
Stir Station	STIR	\$129
Water Depth Sampler	WDS	\$89
Water Quality Bottles	WQ-BOT	\$28

Lab Books

Product	Order Code	Price
<i>Biology with Vernier</i>	BWV	\$48
<i>Investigating Biology through Inquiry</i>	BIO-I	\$48
<i>Advanced Biology with Vernier</i>	BIO-A	\$48
<i>Human Physiology Experiments</i>	HSB-HP	\$38
<i>Investigating Environmental Science through Inquiry</i>	ESI	\$48
<i>Renewable Energy with Vernier</i>	REV	\$48
<i>Water Quality with Vernier</i>	WQV	\$48

See all our products for biology online at [vernier.com/biology](https://www.vernier.com/biology)

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Prices are for US educational institutions only and are subject to change without notice.



Chemistry

[vernier.com/chemistry](https://www.vernier.com/chemistry)



Why Vernier?

When you teach with Vernier, you're teaching with a complete chemistry solution. From titrations to spectroscopy, our sensors and instrumentation are backed by powerful analytical software, college-level experiments, and unparalleled support.

Quality

Durable hardware for lab and field use

Affordable

Designed for education and educational budgets

Versatile

Supports a variety of devices and experiments



The use of these technologies helps to build students' proficiency using instrumentation while providing them with hands-on experience that will better prepare them for careers in the chemistry field.

Seth Barrett, Ph.D.
Muskingham University

We're here to support you as an educator as you incorporate data-collection technology into your instruction. See how our products provide you with affordable laboratory solutions designed for student success.

Our Guarantee: Most of our products are protected by a 5-year limited warranty. And after five years? We'll make every attempt to repair your equipment.

A Guide to Vernier Data Collection

What You Need to Get Started with Go Direct Sensors

A Go Direct Sensor

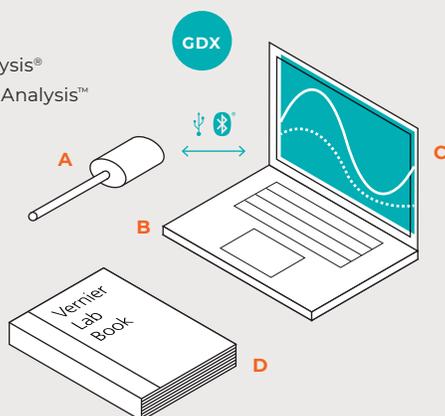
These versatile sensors connect to your device via Bluetooth® wireless technology or USB.

B Device

Go Direct® sensors connect to a wide variety of commonly used devices, including Chromebooks, computers, tablets, smartphones, and LabQuest 2.

C Software

Graphical Analysis™ 4
Vernier Spectral Analysis®
Vernier Instrumental Analysis™



D Lab Book

Our popular, award-winning lab books provide hundreds of well-tested, customizable experiments. Our lab books come with a generous site license. Purchase once and share files across your department.

What You Need to Get Started with LabQuest Sensors

A LabQuest Sensor

LabQuest® sensors share data with your device via a wired connection (BTA/BTD) to an interface from the LabQuest family.

B Interface

An interface sends information from the sensor to the data-collection and analysis software. The LabQuest family includes LabQuest 2, LabQuest Stream®, and LabQuest Mini.

C Device

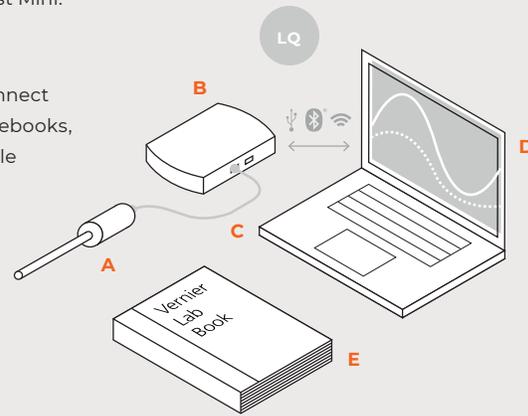
LabQuest sensors connect to computers, Chromebooks, and compatible mobile devices through a LabQuest interface.

D Software

Graphical Analysis 4
Logger Pro® 3

E Lab Book

Our popular, award-winning lab books provide hundreds of well-tested, customizable experiments. Our lab books come with a generous site license. Purchase once and share files across your department.



Software

GDx LQ Graphical Analysis 4 • Vernier Spectral Analysis • NEW Vernier Instrumental Analysis

- Collect, share, and analyze sensor data with our suite of free apps for computers, Chromebooks, and compatible mobile devices.
- Using our Graphical Analysis 4 app, students can collect and analyze data from most Vernier sensors.
- Vernier Spectral Analysis supports our family of spectrometers. Use it to generate full spectra, conduct Beer's law investigations, and investigate kinetics.
- Vernier Instrumental Analysis is used for more advanced instrumentation such as Go Direct Mini GC™ and Go Direct Cyclic Voltammetry System.

LQ Logger Pro 3

Logger Pro 3 is our data-collection and analysis software for LabQuest sensors and spectrometers on Windows® and macOS® computers.

Partnership with LabArchives

Vernier Software & Technology has partnered with LabArchives to bring high-quality chemistry content to instructors through the Lab Builder library. Because all content is structured and standardized, instructors can arrange, customize, and add content to their courses with ease.

vernier.com/lab-archives

Free 30-Day
Preview

Not sure if our technology is right for your laboratory? Our risk-free preview program makes it easier to decide. Most Vernier products are available for a 30-day preview (or longer, if requested) to educational institutions.

General Chemistry

Go Direct Temperature

Use this rugged temperature probe for investigating endothermic and exothermic reactions, determining the physical properties of water, and investigating intermolecular forces.

Range: -40 to 125°C

GDX-TMP \$69

vernier.com/gdx-tmp



Go Direct pH

Go Direct pH is an important and versatile sensor for your laboratory. Conduct acid-base titrations, monitor pH changes during chemical reactions, and investigate buffers. The wireless connection makes it easier to do field-based studies such as testing the pH of surface water.

GDX-PH \$89

vernier.com/gdx-ph



Go Direct Gas Pressure

Explore gas laws and the Clausius-Clapeyron equation with this sensor that measures the absolute pressure of a gas.

GDX-GP \$89

vernier.com/gdx-gp



Go Direct SpectroVis® Plus

With a range of 380 to 950 nm, students can use this spectrophotometer to easily collect a full-wavelength spectrum, study absorbance vs. concentration, or monitor rates of reaction. Collect and analyze data using Vernier Spectral Analysis, LabQuest App, or Logger Pro 3.

GDX-SVISPL \$399

vernier.com/gdx-svispl



Go Direct Drop Counter

As an alternative to using a buret, the drop counter precisely records the number of drops of titrant added during a titration and then automatically converts it to volume.

GDX-DC \$99

vernier.com/gdx-dc



Stir Station

This combination stir plate/ring stand can be used with AC power (included) or four C batteries (not included).

STIR \$129

vernier.com/stir



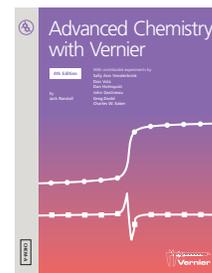
Advanced Chemistry with Vernier

This book contains 35 ready-to-use student experiments that support general chemistry. Instructor notes with sample data are also included.

Topics

- Gas laws
- Titrations
- Spectroscopy
- Electrochemistry

vernier.com/chem-a



Download only
CHEM-A-E \$40

Printed book + download
CHEM-A \$48

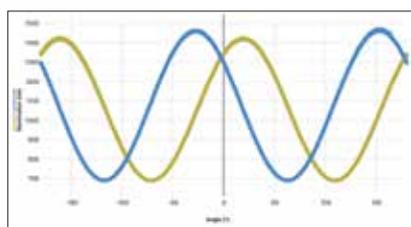
Biochemistry

NEW Go Direct Polarimeter

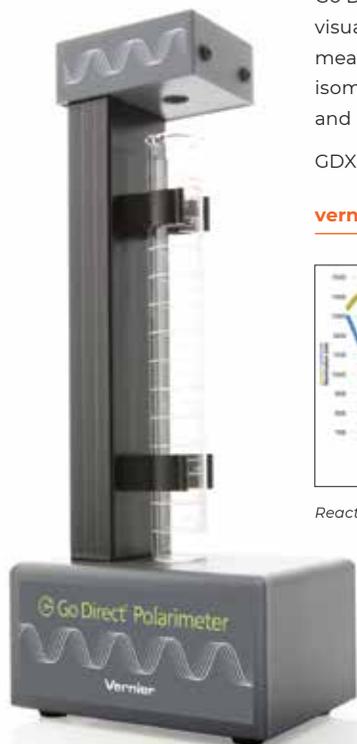
The concept of chirality can be difficult for students to visualize. Go Direct® Polarimeter provides a visual representation of this concept by measuring the optical rotation of optical isomers such as sugars, amino acids, and proteins.

GDX-POL \$499

vernier.com/gdx-pol



Reaction kinetics of sucrose



Vernier Fluorescence/UV-VIS Spectrophotometer

The Fluorescence/UV-VIS Spectrophotometer measures the fluorescence and absorbance spectra of samples such as quinine sulfate, fluorescein, rhodamine, and DAPI.

VSP-FUV \$2,899

vernier.com/vsp-fuv

Wavelength Range

- 220 to 850 nm

Light Sources

- Visible: LED-boosted tungsten
- UV: Deuterium
- Fluorescence: exchangeable LEDs for excitation at 375 nm, 450 nm, and 525 nm (additional wavelengths sold separately)



Go Direct Tris-Compatible Flat pH

Go Direct Tris-Compatible Flat pH is a double-junction electrode for measuring pH in Tris buffers and solutions containing proteins or sulfides. The flat glass shape makes it easy to clean and useful for measuring the pH of semisolids such as soil slurries and certain foods.

GDX-FPH \$115

vernier.com/gdx-fph

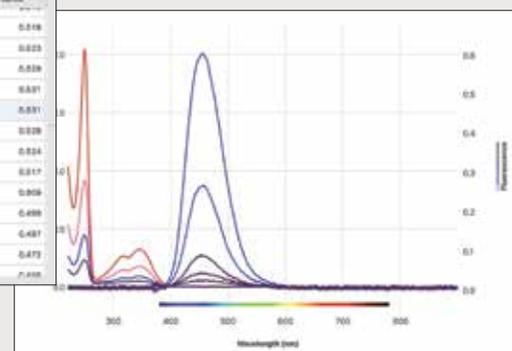
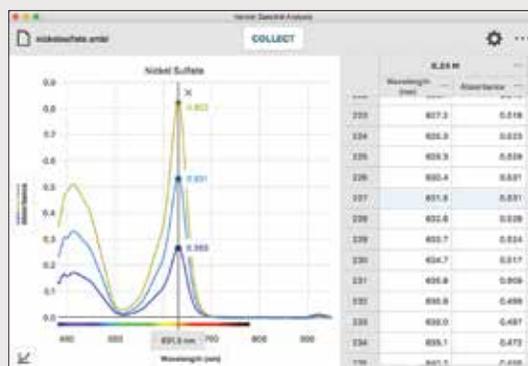


Vernier Spectral Analysis

Our free Vernier Spectral Analysis® app makes it easy to incorporate spectroscopy into your chemistry experiments. Using the app, students can collect a full spectrum and explore topics such as Beer's law, kinetics, and fluorescence.

The user-friendly software includes analysis features such as curve fitting and data interpolation.

vernier.com/spectral-analysis



Organic Chemistry

Go Direct Melt Station

Go Direct Melt Station accurately measures melting temperatures of a solid (up to 260°C), and the real-time graphing provides a unique perspective of the melting process.

GDX-MLT  \$529

vernier.com/gdx-mlt



Go Direct Wide-Range Temperature

Go Direct Wide-Range Temperature is designed to be used as you would use a thermometer for experiments such as the recrystallization of benzoic acid, simple and fractional distillations, determination of boiling points, the synthesis and analysis of aspirin and other organic compounds, and more.

Range: -20 to 330°C

GDX-WRT \$114

vernier.com/gdx-wrt



NEW Go Direct Mini GC

With the easy-to-use Go Direct Mini GC™ and the free Vernier Instrumental Analysis app, students can separate, analyze, and identify substances contained in a volatile liquid or gaseous sample. This portable gas chromatograph detects polar and nonpolar compounds allowing for a wide range of experiments. Sample experiments include fractional distillation and Fischer esterification.

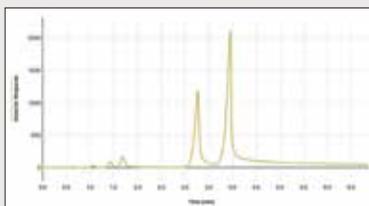
GDX-GC \$2,499

vernier.com/gdx-gc



NEW Vernier Instrumental Analysis

With our free Vernier Instrumental Analysis™ app, students can collect and analyze data from our Go Direct Mini GC and Go Direct Cyclic Voltammetry System (page 6) using computers, Chromebooks, or compatible mobile devices.



vernier.com/instrumental-analysis

Vernier UV-VIS Spectrophotometer

The Vernier UV-VIS Spectrophotometer generates a full spectrum, Beer's law graph, and kinetics traces of ultraviolet and visible-absorbing samples such as aspirin, DNA, proteins, and NADH.

VSP-UV \$2,100

vernier.com/vsp-uv

Wavelength Range

- 220 to 850 nm

Light Sources

- Visible: LED-boosted tungsten
- UV: Deuterium



Free Software

Vernier Spectral Analysis

See page 4.

Organic Chemistry with Vernier

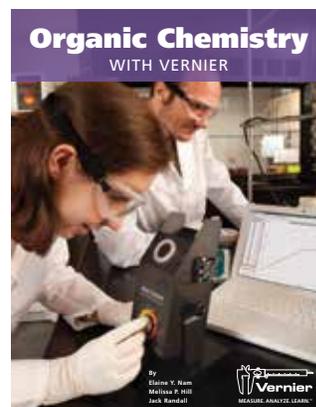
Organic Chemistry with Vernier contains 26 experiments that represent a broad range of topics and techniques taught in most college organic chemistry lab courses. The experiments in this book build upon prior knowledge, laboratory techniques, and skills students have learned in general chemistry courses.

Topics

- Distillation
- Chromatography
- Synthesis
- Polarimetry

vernier.com/chem-o

Updated instructions for Go Direct sensors will be available soon.



Download only
CHEM-O-E \$40

Printed book + download
CHEM-O \$48

Analytical Chemistry



NEW Go Direct Cyclic Voltammetry System

Give your students hands-on experience with electrochemically active reactions using this affordable potentiostat and disposable screen-printed electrodes.

Easily incorporate electrochemistry into your curriculum using our e-book, *Electrochemistry Experiments with the Go Direct Cyclic Voltammetry System*, available for free with your purchase.

GDX-CVS \$899

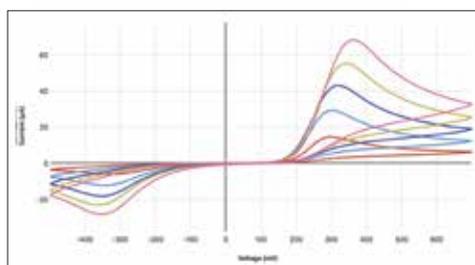
vernier.com/gdx-cvs

Free Software

NEW Vernier Instrumental Analysis™

See page 5.

Determining acetaminophen concentration in children's liquid Tylenol®



NEW Go Direct Polarimeter

The concept of chirality can be difficult for students to visualize. Go Direct® Polarimeter provides a visual representation of this concept by measuring the optical rotation of optical isomers such as sugars, amino acids, and proteins.

GDX-POL \$499

vernier.com/gdx-pol



Vernier UV-VIS Spectrophotometer

The Vernier UV-VIS Spectrophotometer generates a full spectrum, Beer's law graph, and kinetics traces of ultraviolet and visible-absorbing samples such as aspirin, DNA, proteins, and NADH.

VSP-UV \$2,100

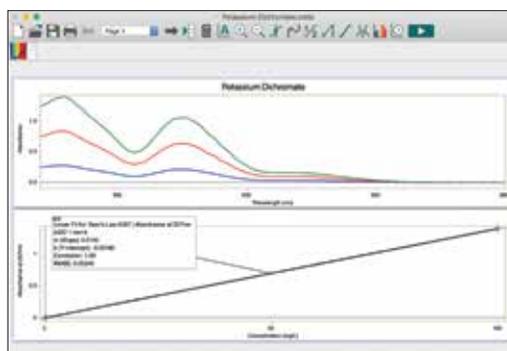
Wavelength Range

- 220 to 850 nm

Light Sources

- Visible: LED-boosted tungsten
- UV: Deuterium

vernier.com/vsp-uv



Examining the absorbance spectrum of potassium dichromate using the Vernier UV-VIS Spectrophotometer and Logger Pro®

Recommended Accessory

Vernier Spectrophotometer Optical Fiber

Analyze emissions spectra of gas discharge tubes or flame tests with this optical fiber.

VSP-FIBER \$74 vernier.com/vsp-fiber

Free Software

Vernier Spectral Analysis®

See page 4.



Go Direct pH

Use this general-purpose pH sensor to monitor the pH of aqueous solutions.

GDX-PH \$89

vernier.com/gdx-ph



Go Direct ORP

Measure the ability of a solution to act as an oxidizing or reducing agent.

GDX-ORP \$99

vernier.com/gdx-orp



Go Direct Drop Counter

This sensor precisely records the number of drops of titrant added during a titration and then automatically converts it to volume.

GDX-DC \$99

vernier.com/gdx-dc



Physical Chemistry

Vernier Fluorescence/ UV-VIS Spectrophotometer

The Fluorescence/UV-VIS Spectrophotometer measures the fluorescence and absorbance spectra of ultraviolet and visible samples such as quinine sulfate, fluorescein, rhodamine, and DAPI.

VSP-FUV \$2,899

Wavelength Range

- 220 to 850 nm

Light Sources

- Visible: LED-boosted tungsten
- UV: Deuterium
- Fluorescence: exchangeable LEDs for excitation at 375 nm, 450 nm, and 525 nm (additional wavelengths sold separately)

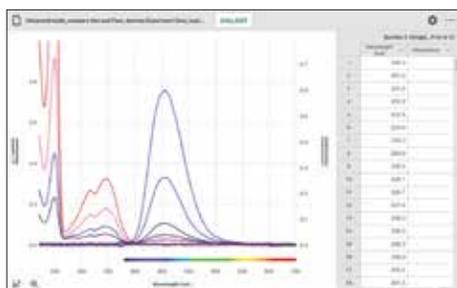
vernier.com/vsp-fuv



Free Software

Vernier Spectral Analysis

See page 4.



Absorbance and fluorescence spectra of quinine sulfate at varying concentrations

Vernier Flash Photolysis Spectrometer

The Vernier Flash Photolysis Spectrometer is perfect for students to explore the fundamental principles of photochemical reactions. It measures the absorption and emission changes of a photoexcited sample with microsecond resolution.

VSP-FP \$4,999

Wavelength Range

- 450 to 750 nm

Light Sources

- Xenon flashlamp (pump) white LED (probe)

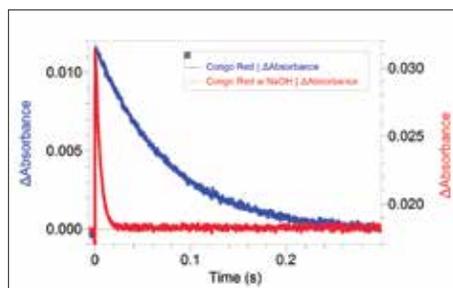
vernier.com/vsp-fp



Free Software

Collect data with a free all-inclusive LabVIEW™ Virtual Instrument (VI)*. LabVIEW purchase not required

*Available for Windows® only



Fast photocatalysis of Congo Red

NEW Go Direct Mini GC

Teach students chromatography with an affordable, portable gas chromatograph that detects polar and nonpolar compounds. With the easy-to-use Go Direct Mini GC™ and the free Vernier Instrumental Analysis™ app, students can separate, analyze, and identify substances contained in a volatile liquid or gaseous sample. Go Direct Mini GC uses Bluetooth® wireless technology or USB to connect to your device.

Included with Go Direct Mini GC is our *Chromatography Experiments with the Go Direct Mini GC* e-book. This lab manual includes student instructions and instructor notes.

GDX-GC \$2,499

vernier.com/gdx-gc



Free Download

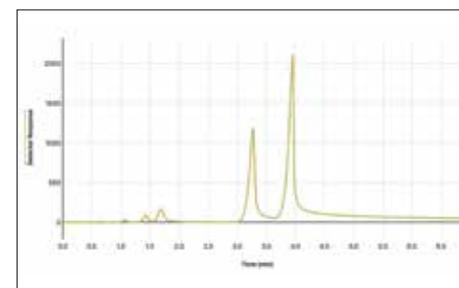
Chromatography Experiments with the Go Direct Mini GC e-book

Free with purchase of Go Direct Mini GC

Free Software

NEW Vernier Instrumental Analysis

See page 5.



Separating a mixture of alkanes, esters, and cyclic hydrocarbons

Chemistry Products

Go Direct Sensors

Sensor	Order Code	Price
Go Direct® Colorimeter	GDX-COL	\$119
Go Direct Conductivity	GDX-CON	\$99
Go Direct Constant Current System	GDX-CCS	\$74
Go Direct Current	GDX-CUR	\$79
Go Direct Drop Counter	GDX-DC	\$99
Go Direct Electrode Amplifier	GDX-EA	\$64
Go Direct Gas Pressure	GDX-GP	\$89
Go Direct Melt Station	vernier.com/gdx-mlt	
Go Direct ORP	GDX-ORP	\$99
pH Sensors		
Go Direct Glass-Body pH	GDX-GPH	\$139
Go Direct pH	GDX-PH	\$89
Go Direct Tris-Compatible Flat pH	GDX-FPH	\$115
Go Direct Polarimeter	GDX-POL	\$499
Go Direct Radiation Monitor	GDX-RAD	\$179
Go Direct SpectroVis® Plus	GDX-SVISPL	\$399
Temperature Probes		
Go Direct Surface Temperature	GDX-ST	\$79
Go Direct Temperature	GDX-TMP	\$69
Go Direct Wide-Range Temperature	GDX-WRT	\$114
Go Direct Voltage	GDX-VOLT	\$69

LabQuest Sensors

Sensor	Order Code	Price
Colorimeter	COL-BTA	\$119
Conductivity Probes		
Conductivity Probe	CON-BTA	\$99
Platinum-Cell Conductivity Probe	CONPT-BTA	\$149
Current Probes		
Constant Current System	CCS-BTA	\$64
Current Probe	DCP-BTA	\$39
Drop Counter	VDC-BTD	\$99
Electrode Amplifier	EA-BTA	\$49
Gas Pressure Sensors		
Gas Pressure Sensor	GPS-BTA	\$89
Pressure Sensor 400	PS400-BTA	\$189
Instrumentation Amplifier	INA-BTA	\$79
Melt Station	vernier.com/mlt-bta	
ORP Sensor	ORP-BTA	\$89
pH Sensors		
Glass-Body pH Electrode BNC (requires Electrode Amplifier)	GPH-BNC	\$85
pH Sensor	PH-BTA	\$88
Tris-Compatible Flat pH Sensor	FPH-BTA	\$104
Polarimeter (Chemical)	vernier.com/chem-pol	
Radiation Monitor	VRM-BTD	\$180
Temperature Probes		
Stainless Steel Temperature Probe	TMP-BTA	\$36
Surface Temperature Sensor	STS-BTA	\$25
Thermocouple	TCA-BTA	\$69
Wide-Range Temperature Probe	WRT-BTA	\$82
Voltage Probes		
Differential Voltage Probe	DVP-BTA	\$39
Voltage Probe	VP-BTA	\$12

Instrumentation

Instrument	Order Code	Price
Go Direct Mini GC™	GDX-GC	\$2,499
Go Direct Cyclic Voltammetry System	GDX-CVS	\$899

Spectrometers

Spectrometer	Order Code	Price
Go Direct SpectroVis Plus	GDX-SVISPL	\$399
Vernier Emissions Spectrometer	VSP-EM	\$799
Vernier Flash Photolysis Spectrometer	VSP-FP	\$4,999
Vernier Fluorescence/UV-VIS Spectrophotometer	VSP-FUV	\$2,899
Vernier Spectrometer (Ocean Optics™)	V-SPEC	\$1,999
Vernier UV-VIS Spectrophotometer	VSP-UV	\$2,100

Lab Equipment

Equipment	Order Code	Price
Electrode Support	ESUP	\$10
OHAUS® Balances	vernier.com/ohaus	
Stir Station	STIR	\$129

See all our products for college chemistry online at [vernier.com/chemistry](https://www.vernier.com/chemistry)

Logger Pro, LabQuest, SpectroVis, Vernier and caliper design, Go Direct, and Vernier Spectral Analysis are our registered trademarks. Vernier Software & Technology, vernier.com, Vernier Mini GC, Vernier Instrumental Analysis, and Graphical Analysis are our trademarks or trade dress. The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Vernier Software & Technology is under license. All other marks not owned by us that appear herein are the property of their respective owners, who may or may not be affiliated with, connected to, or sponsored by us.

Prices are for US educational institutions only and are subject to change without notice.



Physics

vernier.com/physics



Why Vernier?

Vernier started when one educator, Dave Vernier, decided to build solutions to bring physics to life for his students. Today, our complete physics solution is still powered by the desire to inspire students and foster learning, and backed by powerful software and unparalleled support.

Quality

Durable hardware lasts for years of use

Affordable

Designed for education and educational budgets

Versatile

Supports a variety of devices and experiments



I really find your hardware, and especially *Logger Pro*, extremely helpful in my teaching. Couldn't do it without your stuff.

Barbara Hughey
Massachusetts Institute of Technology
Cambridge, MA

We're here to support you as an educator as you incorporate data-collection technology into your instruction. See how our products provide you with affordable laboratory solutions designed for student success.

Our Guarantee: Most of our products are protected by a 5-year limited warranty. And after five years? We'll make every attempt to repair your equipment.

A Guide to Vernier Data Collection

What You Need to Get Started with Go Direct Sensors

A Go Direct Sensor

These versatile sensors connect to your device via Bluetooth® wireless technology or USB.

B Device

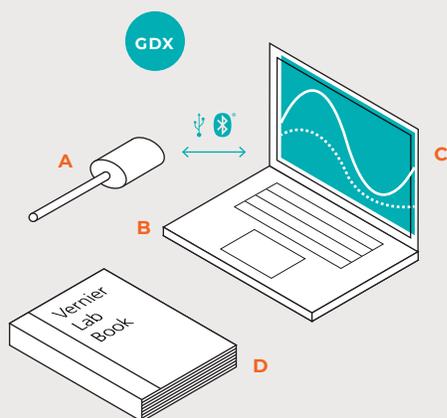
Go Direct® sensors connect to a wide variety of commonly used devices, including Chromebooks, computers, smartphones, tablets, and LabQuest 2.

C Software

Graphical Analysis™ 4
Vernier Spectral Analysis®

D Lab Book

Our popular, award-winning lab books provide hundreds of well-tested, customizable experiments. Many of our lab books provide support for Go Direct sensors and the Graphical Analysis 4 app. Our lab books come with a generous site license. Purchase once and share files across your department.



What You Need to Get Started with LabQuest Sensors

A LabQuest Sensor

LabQuest® sensors share data with your device via a wired connection (BTA/BTD) to an interface from the LabQuest family.

B Interface

An interface sends information from the sensor to the data-collection and analysis software. The LabQuest family includes LabQuest 2, LabQuest Stream®, and LabQuest Mini.

C Device

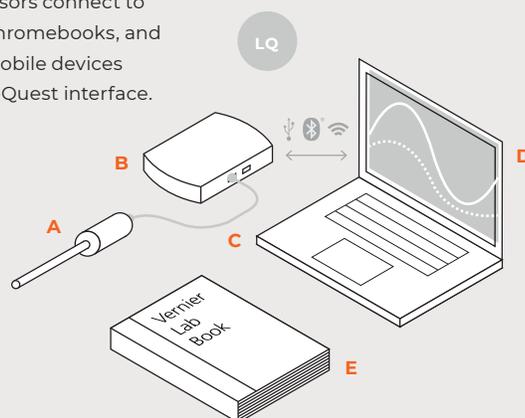
LabQuest sensors connect to computers, Chromebooks, and compatible mobile devices through a LabQuest interface.

D Software

Graphical Analysis 4
Logger Pro® 3

E Lab Book

Our popular, award-winning lab books provide hundreds of well-tested, customizable experiments. Our lab books come with a generous site license. Purchase once and share files across your department.

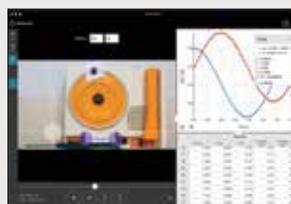
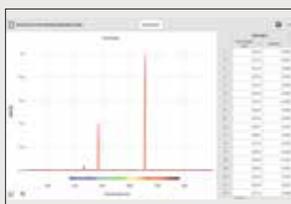
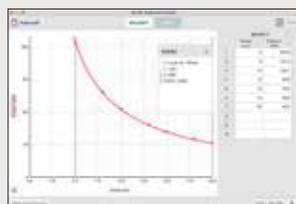


Software

GDx LQ

Graphical Analysis 4 • Vernier Spectral Analysis • NEW Vernier Video Analysis®

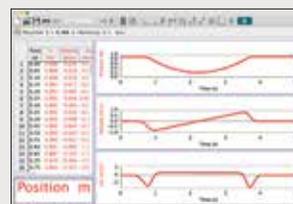
- Collect, share, and analyze sensor data with our suite of apps for computers, Chromebooks, and compatible mobile devices.
- Using our Graphical Analysis 4 app, students can collect and analyze data from a wide selection of Vernier sensors. Spectral Analysis supports our family of spectrometers.
- Students can use their smartphone or tablet in the laboratory or out in the field to record motion. They can then import the video into Video Analysis on any device to mark the object in motion, set the scale, and create graphs of the motion.



LQ

Logger Pro 3

Logger Pro 3 is our data-collection and analysis software for LabQuest sensors and spectrometers on Windows® and macOS® computers.



Free 30-Day
Preview

Not sure if our technology is right for your laboratory? Our risk-free preview program makes it easier to decide. Most Vernier products are available for a 30-day preview (or longer, if requested) to educational institutions.

Mechanics

Dynamics Cart and Track System with Go Direct Sensor Cart

The Dynamics Cart and Track System with Go Direct Sensor Cart includes essential laboratory equipment for teaching dynamics and kinematics. With our Go Direct Sensor Cart, students can explore force, position, velocity, and acceleration directly on their device using Bluetooth® wireless technology. There are no wires to create drag, and no additional equipment is required! Each cart features built-in sensors that simplify experiment setup and make this system the best choice for studying dynamics and kinematics.

with 1.2 m Track DTS-GDX ⚡ \$535

with 2.2 m Track DTS-GDX-LONG ⚡ \$639

vernier.com/dts-gdx

Additional Cart and Track options are available at vernier.com/dynamics



Go Direct Photogate



This double-gate sensor includes two photogates built into the arms of the sensor. It accurately measures velocity and acceleration.

GDx-VPG \$89

vernier.com/gdx-vpg



Go Direct Force and Acceleration



Measure forces as small as ± 0.1 N and up to ± 50 N with this sensor that couples a 3-axis accelerometer with a stable and accurate force sensor. It also includes a 3-axis gyroscope for experiments involving rotation.

GDx-FOR \$99

vernier.com/gdx-for



Go Direct Centripetal Force Apparatus



When combined with Go Direct Force and Acceleration (not included), the Centripetal Force Apparatus makes an ideal tool to explore rotational dynamics.

GDx-CFA \$299

vernier.com/gdx-cfa



Moment of Inertia Accessory Kit



LQ

With the Moment of Inertia Accessory Kit, students can explore inertia in a broader context. The kit expands the capabilities of the Vernier Centripetal Force Apparatus when investigating moments of inertia of different geometries.

CFA-MIK \$179

vernier.com/cfa-mik



Go Direct Motion



Use ultrasound to measure the position, velocity, and acceleration of moving objects.

GDx-MD \$99

vernier.com/gdx-md



NEW Vernier Video Analysis App

Students can use their smartphones and tablets in the laboratory or out in the field to capture motion. Once inserted into the app, students set the scale and mark points within the video to track the object in motion. Vernier Video Analysis™ generates accurate and visually rich graphs and a data table reflecting the recorded motion.

Video Analysis is a browser-based app that works on Windows®, macOS®, Android™, Chrome OS™, iOS, and iPadOS™.



Free 30-day trial available

vernier.com/video-analysis

Waves and Sound

Go Direct Sound

GDX

This is really two sensors in one—measure sound level in decibels, or capture and evaluate sound waveforms.

GDX-SND \$89

vernier.com/gdx-snd



Power Amplifier

Drive devices such as speakers, lamps, and small DC motors.

PAMP \$225

vernier.com/pamp



Power Amplifier Accessory Speaker

Study mechanical waves on strings and springs.

PAAS-PAMP \$125

vernier.com/paas-pamp



Thermodynamics

Go Direct Gas Pressure

GDX

This sensor measures the absolute pressure of a gas.

GDX-GP \$89

vernier.com/gdx-gp



Go Direct Temperature

GDX

Go Direct® Temperature is a durable, stainless steel temperature sensor for use in liquids or air.

Range: -40 to 125°C

GDX-TMP \$69

vernier.com/gdx-tmp



Go Direct Surface Temperature

GDX

An exposed temperature sensor makes this an ideal choice for situations where low thermal mass and extremely rapid response are needed. Use in air and water only.

Range: -25 to 125°C

GDX-ST \$79

vernier.com/gdx-st



FLIR ONE® Gen 3 Thermal Camera

Reveal the hidden world of infrared vision. When used with our Vernier Thermal Analysis® Plus app, students can also collect temperature vs. time data for up to four points or regions, along with a thermal image video.

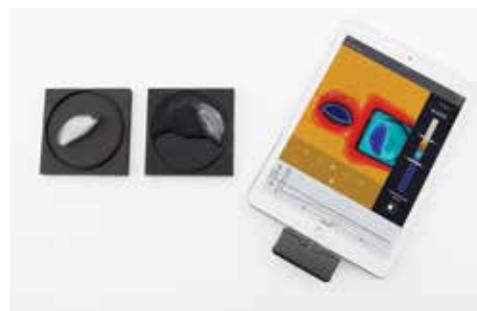
FLIRPRO-IOS \$399

vernier.com/flirpro-ios

Vernier Thermal Analysis® Plus App

This iOS and iPadOS™ app enables graphing temperature vs. time for up to four points or regions when using a FLIR ONE camera.

vernier.com/thermal-analysis



Electricity and Magnetism

Go Direct Voltage

GDX

This sensor combines a wide input voltage range and high precision, making it an excellent choice for investigations of both AC/DC circuits and electromagnetism.

Ranges: ± 20 V and ± 1 V

GDX-VOLT \$69

vernier.com/gdx-volt



Go Direct Current

GDX

Measure electric currents in circuits with this versatile sensor.

Ranges: ± 1 A and ± 0.1 A

GDX-CUR \$79

vernier.com/gdx-cur



Charge Sensor

LQ

Use the Charge Sensor* as an electronic electroscopes to obtain quantitative measurements when studying charging by induction, friction, or contact.

Ranges: ± 20 nC and ± 100 nC

CRG-BTA \$79

vernier.com/crg-bta

* Requires an interface such as LabQuest 2 or LabQuest Mini



Go Direct 3-Axis Magnetic Field

GDX

Determine the magnitude and direction of a magnetic field at any point in space with this 3-axis sensor.

Ranges: ± 5 mT and ± 130 mT

GDX-3MG \$69

vernier.com/gdx-3mg



Electrostatics Kit

With the Electrostatics Kit, students can conduct a range of experiments in electrostatics when used with the Charge Sensor.

ESK-CRG \$119

vernier.com/esk-crg



High-Voltage Electrostatics Kit

Use this kit to investigate the distribution of charge on a sphere, transfer of charge on contact between two spheres, and charging by induction.

HVEK-CRG \$289

vernier.com/hvek-crg



Extech® Digital Power Supply

This power supply provides constant current or constant voltage for physics activities that require DC power.

EXPS \$240

vernier.com/exps



Vernier Circuit Board 2

Use this convenient platform to study basic series and parallel circuits as well as RLC circuits. Many components for experimentation are provided, and additional components can be added to expand the capability of this useful board.

VCB2 ✎ \$129

vernier.com/vcb2



Electrostatic High-Voltage Genecon

A great addition to the High Voltage Electrostatics Kit, the Electrostatic High-Voltage Genecon generates both positive and negative charges and reliably creates charge differences in high humidity.

HVEK-GEN \$229

vernier.com/hvek-gen



Light and Optics

Light Sensors

Go Direct Light and Color

GDX

This sensor combines visible light, UV, and RGB sensors to measure source emission, transmittance, and reflection of light in the visible light to ultraviolet electromagnetic spectrum.

GDX-LC \$79

vernier.com/gdx-lc



Light Sensor*

LQ

Investigate polarizers, reflectivity, and solar energy with this sensor that approximates the human eye in spectral response. It's great for inverse square law experiments.

LS-BTA ⚡ \$59 vernier.com/ls-bta



Diffraction Apparatus[‡]

LQ

Use the Diffraction Apparatus* to map light intensity vs. position for various slit geometries.

DAK \$620 vernier.com/dak

Green Diffraction Laser (optional)

Add this laser to your Diffraction Apparatus to study the effect of wavelength on a diffraction pattern.

GDL-DAK \$250 vernier.com/gdl-dak



Optics Expansion Kit

Use the Optics Expansion Kit[‡] with your dynamics track to conduct optics experiments, such as image formation with lenses and light intensity vs. distance. You can even use the kit to build a basic telescope.

Kit includes

- 3 lenses (100 mm converging lens, 200 mm converging lens, -150 mm diverging lens)
- Screen
- Combination luminous and point light source
- Light Sensor Holder
- Aperture screen
- Power supply

The Optics Expansion Kit is used in experiments in our *Physics with Vernier* and *Advanced Physics with Vernier—Beyond Mechanics* lab books.

OEK \$179

vernier.com/oek

See website for replacement parts.

Accessories

Color Mixer Kit[‡]

CM-OEK \$175 vernier.com/cm-oek



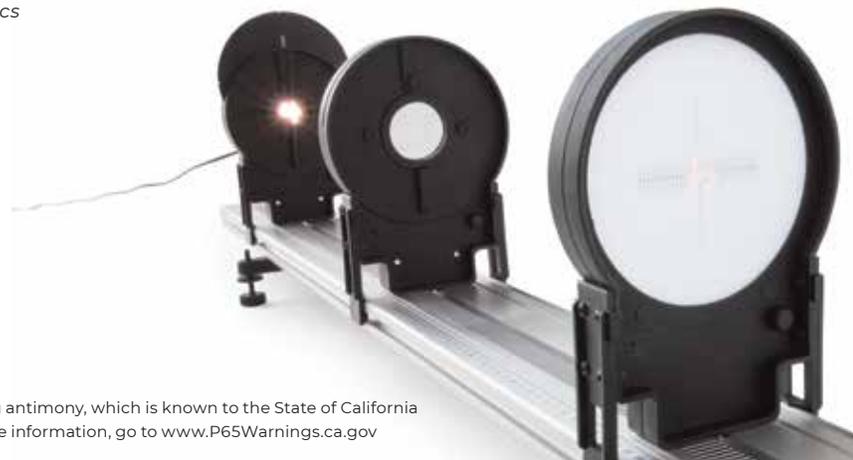
Mirror Set

M-OEK \$59 vernier.com/m-oek



Polarizer/Analyzer Set

PAK-OEK \$85 vernier.com/pak-oek



* Requires an interface such as LabQuest 2 or LabQuest Mini

‡ Requires a Combination 1.2 m Track/Optics Bench (TRACK, \$135)

⚡ ⚠ WARNING: This product can expose you to chemicals, including antimony, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov

Modern Physics

Radiation Monitors

Our radiation monitors detect alpha, beta, gamma, and X-ray radiation. They can be used to explore radiation statistics, measure the rate of nuclear decay, monitor radon progeny, and investigate the effects of shielding. The sensors include both LED and audible indicators.

Go Direct Radiation Monitor



GDX-RAD \$179

vernier.com/gdx-rad



Vernier Radiation Monitor*



VRM-BTD \$180

vernier.com/vrm-btd



Vernier Emissions Spectrometer

The Vernier Emissions Spectrometer gives precise measurements over a range of 350–900 nm. Use it with or without the optional optical fiber to examine spectra of light bulbs, spectrum tubes, or the sun.

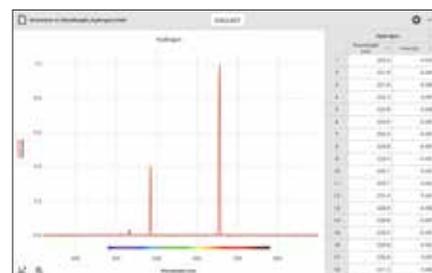
VSP-EM \$799

vernier.com/vsp-em

Vernier Emissions Fiber

VSP-EM-FIBER \$88

vernier.com/vsp-em-fiber



Vernier Spectral Analysis App

Our free Vernier Spectral Analysis® app with our Emissions Spectrometer makes it easy to analyze spectra. Students can quickly locate peaks or compare spectra from different sources.

vernier.com/spectral-analysis

Spectrum Tube Power Supplies

Single

This power supply features an ultra-safe design for electrifying spectrum tubes.

ST-SPS ▼ \$25

vernier.com/st-sps



Carousel

This power supply holds up to eight gas spectrum tubes.

ST-CAR ▼ \$319

vernier.com/st-car



Spectrum Tubes

Spectrum Tubes are permanently enclosed in protective plastic carriers, with no exposed high voltage.

Hydrogen	ST-H ▼	\$45
Nitrogen	ST-N ▼	\$45
Helium	ST-HE ▼	\$45
Neon	ST-NE ▼	\$45
Carbon Dioxide	ST-CO2 ▼	\$45
Air	ST-AIR ▼	\$45
Argon	ST-AR ▼	\$45



Spectrum Tubes carry a warranty of 2 years or 100 hours, whichever comes first (hydrogen tube: two years or 40 hours, whichever comes first).

vernier.com/spectrum-tubes

Additional Physics Products

Mechanics

Product	Order Code	Price
Go Direct® Acceleration	GDX-ACC	\$99
3-Axis Accelerometer	3D-BTA	\$99
25-g Accelerometer	ACC-BTA	\$96
Bumper and Launcher Kit	BLK	\$89
Centripetal Force Apparatus	CFA	\$549
Dual-Range Force Sensor	DFS-BTA	\$109
Dynamics Cart and Track System	vernier.com/dts	
Dynamics Cart and Track System with Motion Encoder	vernier.com/dts-ec	
Eddy Current Brake	DTS-ECB	\$19
Encoder Fan Cart	CART-FEC	\$225
Fan Cart	CART-F	\$109
Force Plate	FP-BTA	\$289
Friction Pad DTS	DTS-PAD	\$32
Independence of Motion	IOM-VPL	\$59
Go Direct Sensor Cart Accessory Kit	GDX-CART-AK	\$58
Low-g Accelerometer	LGA-BTA	\$89
Motion Detector	MD-BTD	\$89
Photogate	VPG-BTD	\$49
Go Direct Projectile Launcher	GDX-PL	\$449
Vernier Projectile Launcher	VPL	\$389
Projectile Stop	PS-VPL	\$40
Pulley Bracket	B-SPA	\$12
Go Direct Rotary Motion	vernier.com/gdx-rms	
Rotary Motion Sensor	vernier.com/rmv-btd	
Rotational Motion Accessory Kit	vernier.com/ak-rmv	
Time of Flight Pad	TOF-VPL	\$84
Ultra Pulley Attachment	SPA	\$24

Waves and Sound

Product	Order Code	Price
Microphone	MCA-BTA	\$44
Sound Level Sensor	SLS-BTA	\$69

Thermodynamics

Product	Order Code	Price
FLIR ONE® Pro Thermal Camera	vernier.com/flirpro-ios	
FLIR ONE Pro LT for iOS Thermal Camera	vernier.com/flirlt-ios	
Gas Pressure Sensor	GPS-BTA	\$89
Stainless Steel Temperature Probe	TMP-BTA	\$36
Surface Temperature Sensor	STS-BTA	\$25

Electricity and Magnetism

Product	Order Code	Price
Magnetic Field Sensor	MG-BTA	\$58
Power Amplifier	PAMP	\$225
Differential Voltage Probe	DVP-BTA	\$39
Current Probe	DCP-BTA	\$39
Instrumentation Amplifier	INA-BTA	\$79
Optional Breadboard Kit for the Vernier Circuit Board 2	VCB2-OB BK	\$29
Extech® Digital DC Power Supply	EXPS	\$240

Light and Optics

Product	Order Code	Price
Polarizer/Analyzer Set for Optics Expansion Kit	PAK-OEK	\$85
Combination 1.2 m Track/Optics Bench	TRACK	\$135
Combination 2.2 m Track/Optics Bench	TRACK-LONG	\$239
Green Diffraction Laser	GDL-DAK	\$250



Also check out Pivot Interactives for Physics at [vernier.com/pivot](https://www.vernier.com/pivot)

Start a free 30-day trial* today at
[pivotinteractives.com](https://www.pivotinteractives.com)

* Not available in countries subject to GDPR

This is just a sample of our physics solutions. To see the full suite of Vernier physics products, please visit [vernier.com/physics](https://www.vernier.com/physics)

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Prices are for US educational institutions only and are subject to change without notice.



Engineering

[vernier.com/engineering](https://www.vernier.com/engineering)

Why Vernier?

Vernier engineering solutions harness the power of analytical software and the precision of high-quality sensors to help students sharpen their design skills and prepare to enter the workforce. As with all of our solutions, our engineering technology is backed by unparalleled support.

Quality

Durable hardware for lab and field use

Affordable

Designed for education and educational budgets

Versatile

Supports a variety of devices and experiments



Our projects are about more than just supporting the need for engineering education in local classrooms. Vernier products help deepen our students' learning through experiential, hands-on community engagement.

*Maija A. Benitz, Ph.D.
Assistant Professor of Engineering
Roger Williams University*

We're here to support you as an educator as you incorporate data-collection technology into your instruction. See how our products provide you with affordable laboratory solutions designed for student success.

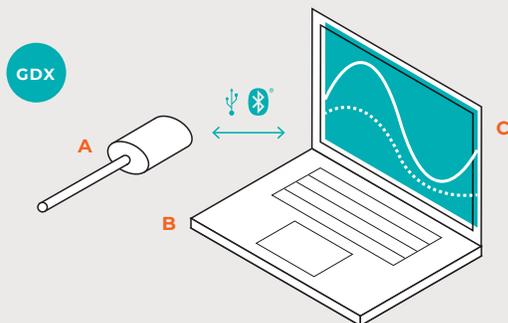
Our Guarantee: Most of our products are protected by a 5-year limited warranty. And after five years? We'll make every attempt to repair your equipment.

A Guide to Vernier Data Collection

What you need to get started with Go Direct sensors

Go Direct® sensors connect directly (no interface required) to your computer, Chromebook™, or compatible mobile device via USB or Bluetooth® wireless technology. Collect and analyze the data with our free Graphical Analysis 4 app, Microsoft® Excel®, NI LabVIEW™, Python®, or JavaScript™.

- A Go Direct sensor**
- B Computer, Chromebook, tablet, smartphone**
- C Software (see below)**



What you need to get started with LabQuest sensors

LabQuest® sensors have a cable with a plug that makes it easy to connect and disconnect to an interface without any additional wiring. Use LabQuest sensors with a Vernier interface, Arduino® NI ELVIS, NI myDAQ, or your own DAQ hardware. If using a non-Vernier interface, these sensors require a +5.0 volt supply voltage and output a 0 to 5 volt signal. Most sensors have a simple, linear calibration.

- A LabQuest sensor**
- B Interface (LabQuest, DAQ, or Arduino)**
- C Computer, Chromebook, tablet, smartphone**
- D Software (see below)**



Software

Use our Graphical Analysis™ 4 app or Logger Pro® 3 software to easily collect and analyze data. We also provide support for popular engineering software such as Excel, NI LabVIEW, and Python.

GDx

Software supporting Go Direct sensors

- Graphical Analysis 4**
- National Instruments LabVIEW**
- Python**
- JavaScript**
- Microsoft Excel**

LQ

Software supporting LabQuest sensors

- Graphical Analysis 4**
- Logger Pro 3**
- National Instruments LabVIEW**
- Arduino IDE**

Free 30-Day
Preview

Not sure if our technology is right for your laboratory? Our risk-free preview program makes it easier to decide. Most Vernier products are available for a 30-day preview (or longer, if requested) to educational institutions.

Introduction to Engineering

Go Direct Energy

Go Direct Energy measures voltage and current and displays power and energy output of scale model wind turbines and solar panels, so students can quantitatively evaluate the effects of their design changes. It connects via Bluetooth® wireless technology or USB to your device.

GDX-NRG \$89

vernier.com/gdx-nrg



Vernier Variable Load

Use the Vernier Variable Load in conjunction with Go Direct Energy to provide a range of resistive loads for projects such as engineering wind turbines or investigating solar panels. Students can adjust the potentiometer to provide resistances between 6 and 255 Ω to determine the optimal load on a system.

VES-VL \$64

vernier.com/ves-vl



Advanced Wind Experiment Kit

Use this kit as a fast and easy way to introduce the engineering aspects of wind turbine technology. Investigate different blade designs, gear ratios, and generators.

KW-AWX \$154

vernier.com/kw-awx



See all our products for engineering at vernier.com/engineering

Wind Turbine Design

Tower and Base Set

Do you need a tower for your turbine nacelle? This is the same tower that comes in the Basic Wind Experiment Kit and the Advanced Wind Experiment Kit. The tower has a diameter that fits inside 1-inch PVC fittings.

KW-TBS \$24 vernier.com/kw-tbs



Basic Turbine Building Parts

The Basic Turbine Building Parts kit includes three hubs, a wind turbine generator, and 25 dowels, all in one package.

KW-BTPART \$16
vernier.com/kw-btpart



Wind Turbine Generator with Wires

This is the primary generator for wind turbine experiments because it runs smoothly and provides high power output at a relatively low RPM.

KW-GEN \$7
vernier.com/kw-gen



Hub (3 Pack)

With these 12-hole crimping hubs, made from recycled plastic, students can turn a DC generator into a wind turbine.

KW-WTH3 \$22
vernier.com/kw-wth3



Nacelle

Build a complete turbine by making your own tower and base with PVC pipe (from a hardware store) or use the Tower and Base Set. You will also need a generator and a way to affix the turbine blades.

KW-NAC \$18
vernier.com/kw-nac



simpleGEN

Students can use the easy-to-build AC generator of the simpleGEN to explore the basics of electrical generator design.

KW-SGEN \$59
vernier.com/kw-sgen



Gear Set

The small 8-tooth gear fits on 2 mm driveshafts that are found on many DC generators. The gears have a keying feature and can be changed quickly and easily using the included hex locks. The hex locks secure to our 9/64 inch hex driveshaft, which is included in the Drivetrain Set (KW-DS, \$8).

Gear sizes: 64 teeth, 32 teeth, 16 teeth, 8 teeth

KW-GEAR \$9
vernier.com/kw-gear



Balsa Blade Sheets

Balsa wood is very light weight and stiff, making it perfect for wind turbine blade design.

KW-BBS10 \$12
vernier.com/kw-bbs10



See all our products for engineering at vernier.com/engineering

Measurement and Instrumentation

Biomedical Engineering with Go Direct Sensors GDX

With wireless options and multiple on-board sensors, Go Direct sensors are perfect for analyzing and studying physiological functions.

Go Direct EKG

Go Direct® EKG has five channels: EKG, heart rate, EMG, EMG rectified, and voltage.

GDX-EKG \$159

vernier.com/gdx-ekg



Go Direct O₂ Gas

This sensor measures gaseous oxygen concentration levels and air temperature.

GDX-O2 \$189

vernier.com/gdx-o2



Go Direct Blood Pressure

Go Direct Blood Pressure has seven channels: cuff pressure, mean arterial pressure, systolic pressure, diastolic pressure, pulse rate, oscillations, and envelope.

GDX-BP \$105

vernier.com/gdx-bp



Go Direct Temperature

This rugged, general purpose sensor has a temperature range of -40 to 125°C.

GDX-TMP \$69

vernier.com/gdx-tmp



Go Direct Spirometer

Go Direct Spirometer has six channels: flow rate, volume, adjusted volume, cycle volume, respiration rate, and differential pressure.

GDX-SPR \$199

vernier.com/gdx-spr



Go Direct Surface Temperature

With a range of -25 to 125°C, this sensor is designed for use in situations in which low thermal mass or flexibility is required, such as on human skin.

GDX-ST \$79

vernier.com/gdx-st



Go Direct Hand Dynamometer

Go Direct Hand Dynamometer has seven channels: force, x-axis acceleration, y-axis acceleration, z-axis acceleration, x-axis gyro, y-axis gyro, and z-axis gyro.

GDX-HD \$109

vernier.com/gdx-hd



Go Direct Respiration Belt

Go Direct Respiration Belt has four channels: force, respiration rate, steps, and step rate.

GDX-RB \$99

vernier.com/gdx-rb



Go Direct CO₂ Gas

Go Direct CO₂ Gas has three channels: CO₂ gas, temperature, and relative humidity.

GDX-CO2 \$199

vernier.com/gdx-co2



Go Direct Acceleration

This 3-axis acceleration sensor has two acceleration ranges (± 157 and ± 1960 m/s²) plus an altimeter and a 3-axis gyroscope.

GDX-ACC \$99

vernier.com/gdx-acc



See all our products for engineering at vernier.com/engineering

Arduino with LabQuest Sensors

LQ

Taking measurements with over 80 compatible LabQuest® sensors is easy using our sample sketches, Arduino® library, and online guide.

SparkFun RedBoard with Cable

This Arduino-compatible board makes it easy to take sensor measurements when used with the Vernier Arduino Interface Shield.



ARD-RED \$25 vernier.com/ard-red

Vernier Arduino Interface Shield

Conveniently connect the SparkFun® RedBoard or Arduino Uno to Vernier LabQuest sensors with the Vernier Arduino Interface Shield.



BT-ARD \$29 vernier.com/bt-ard

Motion Detector

The Motion Detector uses ultrasound to measure position of objects.

Range: 0.15 to 6 m

Resolution: 1 mm



MD-BTD \$89 vernier.com/md-btd

Surface Temperature Sensor

Measure temperature where low thermal mass or flexibility is required.

Range: -25 to 125°C



STS-BTA \$25 vernier.com/sts-bta

Digital Control Unit

Use the digital output lines of an interface to control DC electrical devices.



DCU-BTD \$61 vernier.com/dcu-btd

pH Sensor

This is a general-purpose pH sensor.

Range: pH 0 to 14

Accuracy: ±0.2 pH units



PH-BTA \$88 vernier.com/ph-bta

Dual-Range Force Sensor

Measure pushing and pulling forces.

±10 N range has a resolution of 0.01 N

±50 N range has a resolution of 0.05 N



DFS-BTA \$109 vernier.com/dfs-bta

Anemometer

This is an impeller-type anemometer for measuring wind speed.

Range: 0.5 to 30 m/s (1 to 67 mph)



ANM-BTA \$89 vernier.com/anm-bta

Photogate

Measure timing events between, or outside, the arms of the gate.



VPG-BTD \$49 vernier.com/vpg-btd

Low-g Accelerometer

Measure one-dimensional acceleration.

Range: ±50 m/s² (±5 g)

Accuracy: ±0.5 m/s² (±0.05 g)



LGA-BTA \$89 vernier.com/lga-bta

Read the online guide and see all our products for Arduino at vernier.com/arduino

Outreach

Use proven outreach tools to enhance your STEM community engagement projects. Foster an interest in engineering through coding, robotics, renewable energy exploration, and structural design and material science.

LEGO® Robotics

Encourage creativity, critical thinking, and collaboration in primary and secondary students using a LEGO® MINDSTORMS® Education EV3 Core Set (LEGO-EV3-CORE, \$439.90).



Bridge Building

Bring a new level of interest and excitement to your bridge building outreach activities using our new Go Direct Structures & Materials Tester (GDV-VSMT, \$999).



National Instruments LabVIEW and Vernier

Introduce your students to NI LabVIEW™, a programming language used throughout the engineering disciplines. We have sample LabVIEW programs (VIs) for SensorDAQ®, myDAQ, Go Direct® sensors, and other Vernier hardware.

With LabQuest Sensors LQ

SensorDAQ

Designed by National Instruments and Vernier for Engineering Education

SensorDAQ is perfect for teaching NI LabVIEW or for building sensor-controlled student projects using NI LabVIEW software.

Compatible with Over 80 Vernier Sensors

- Use with NI LabVIEW software (not compatible with Logger Pro® 3 software).
- LabQuest sensors simply plug into the interface with no additional wiring.
- Works with Windows® only

SDAQ \$219

vernier.com/sdaq

SensorDAQ carries a one-year warranty.



myDAQ Adapter

The myDAQ Adapter can be used to perform data acquisition with more than 75 Vernier LabQuest sensors and the NI myDAQ interface (sold separately). It is designed for use with NI LabVIEW software.

BT-MDAQ \$59

vernier.com/bt-mdaq



Analog Protoboard Adapter

Use these adapters to connect Vernier LabQuest sensors to a non-Vernier interface, such as NI ELVIS. The connector fits into a standard prototyping board.

BTA-ELV \$10 vernier.com/bta-elv



With Go Direct Sensors GDX

Integrate over 50 wireless sensors into your LabVIEW project to acquire data or control your NI DAQ hardware.

Go Direct Acceleration



GDX-ACC \$99 vernier.com/gdx-acc

Go Direct Motion



GDX-MD \$99 vernier.com/gdx-md

Go Direct Force and Acceleration



GDX-FOR \$99 vernier.com/gdx-for

Go Direct Light and Color



GDX-LC \$79 vernier.com/gdx-lc

Go Direct Rotary Motion



vernier.com/gdx-rms

Go Direct Weather



vernier.com/gdx-wthr

See all our products for NI LabVIEW at vernier.com/ni-labview

Wind Energy

Incorporate hands-on activities into your community engagement projects by challenging students to design and test wind turbines. Wind experiment kits, such as the KidWind MINI Wind Turbine with Blade Design (KW-MWTBD, \$65), are available for every level.



Makeblock Robotics

Makeblock® provides low-cost, easy-to-assemble robotics systems, such as mBot™ (MBOT-P (pink) or MBOT-B (blue), \$69.99), that can be programmed with simple block-based coding, making them an attractive solution if you are considering robotics for outreach.



Engineering Products

Wind Turbine Design

Product	Order Code	Price
Advanced Wind Experiment Kit	KW-AWX	\$154
Balsa Blade Sheets (10 Sheets)	KW-BBS10	\$12
Basic Turbine Building Parts	KW-BTPART	\$16
Drivetrain Set	KW-DS	\$8
Gear Set	KW-GEAR	\$9
Go Direct® Energy	GDX-NRG	\$89
Hub (3 Pack)	KW-WTH3	\$22
Nacelle	KW-NAC	\$18
Tower and Base Set	KW-TBS	\$24
Vernier Variable Load	VES-VL	\$64
Wind Turbine Generator with Wires	KW-GEN	\$7

Engineering with Arduino

Product	Order Code	Price
Anemometer	ANM-BTA	\$89
Digital Control Unit	DCU-BTD	\$61
Dual-Range Force Sensor	DFS-BTA	\$109
Low-g Accelerometer	LGA-BTA	\$89
Motion Detector	MD-BTD	\$89
pH Sensor	PH-BTA	\$88
Photogate	VPG-BTD	\$49
SparkFun® RedBoard with Cable	ARD-RED	\$25
Surface Temperature Sensor	STS-BTA	\$25
Vernier Arduino Interface Shield	BT-ARD	\$29

LabQuest Sensors

Product	Order Code	Price
Barometer	BAR-BTA	\$71
Gas Pressure Sensor	GPS-BTA	\$89
Light Sensor		vernier.com/lq-bta
Magnetic Field Sensor	MG-BTA	\$58
Microphone	MCA-BTA	\$44
Soil Moisture Sensor	SMS-BTA	\$109
Stainless Steel Temperature Probe	TMP-BTA	\$36

Learn more about over 80 LabQuest sensors at vernier.com/labquest

Biomedical Engineering

Product	Order Code	Price
Go Direct Acceleration	GDX-ACC	\$99
Go Direct Blood Pressure	GDX-BP	\$105
Go Direct CO ₂ Gas	GDX-CO2	\$199
Go Direct EKG	GDX-EKG	\$159
Go Direct Hand Dynamometer	GDX-HD	\$109
Go Direct O ₂ Gas	GDX-O2	\$189
Go Direct Respiration Belt	GDX-RB	\$99
Go Direct Spirometer	GDX-SPR	\$199
Go Direct Surface Temperature	GDX-ST	\$79
Go Direct Temperature	GDX-TMP	\$69

NI LabVIEW and Vernier

Product	Order Code	Price
Analog Protoboard Adapter	BTA-ELV	\$10
myDAQ Adapter	BT-MDAQ	\$59
SensorDAQ®	SDAQ	\$219

Outreach

Product	Order Code	Price
Go Direct Structures & Materials Tester	GDX-VSMT	\$999
KidWind MINI Wind Turbine with Blade Design	KW-MWTBD	\$65
LEGO® MINDSTORMS® Education EV3 Core Set with Charger	LEGO-EV3-CORE	\$439.90
mBot™ by Makeblock® (blue)	MBOT-B	\$69.99
mBot by Makeblock (pink)	MBOT-P	\$69.99

Go Direct Sensors

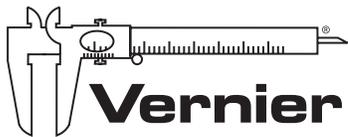
Product	Order Code	Price
Go Direct Acceleration	GDX-ACC	\$99
Go Direct Force and Acceleration	GDX-FOR	\$99
Go Direct Light and Color	GDX-LC	\$79
Go Direct Motion	GDX-MD	\$99
Go Direct Rotary Motion		vernier.com/gdx-rms

Learn more about over 50 Go Direct sensors at vernier.com/go-direct

See all of our engineering products online at vernier.com/engineering

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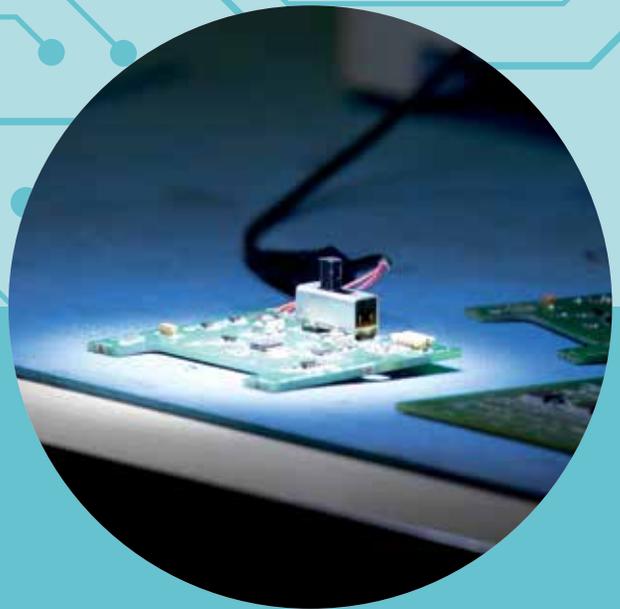


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Our Guarantee

Most of our products are protected by a 5-year limited warranty. And after five years? We'll make every attempt to repair your equipment.